

We claim:

1. An image system, comprising:

a projection screen including a scan surface and a projection surface having a

5 region of adjustable brightness; and

a beam generator operable to direct an electromagnetic off-beam and an electromagnetic on-beam onto the scan surface, the off-beam operable to change the brightness of a region of the projection surface to a selected off-condition and the on-beam operable to change the brightness of the region of the projection surface from the  
10 selected off-condition to a desired brightness level.

2. The image system of claim 1 wherein:

the scan surface is parallel to the projection surface;

the beam generator is operable to direct the off-beam and on-beam onto a region  
15 of the scan surface that is perpendicularly aligned or substantially perpendicularly aligned with the region of the projection surface.

3. The image system of claim 1 wherein the beam generator is operable to generate the on-and off-beams simultaneously.

20

4. The image system of claim 1 wherein the beam generator is operable to generate the on-and off-beams during non-overlapping time periods.

5. The image system of claim 1, further comprising:

25

a display screen that faces the projection surface of the projection screen; and wherein the projection screen is operable to project an image onto the display screen.

6. The image system of claim 1 wherein:

30

the projection surface has a plurality of regions of adjustable brightness;

the off-beam is operable to change the respective brightness of each region of the projection surface to the selected off-condition; and

the on-beam is operable to change the brightness of at least one of the regions of the projection surface to a first brightness level that is different from the off condition  
5 and a second of the regions of the projection surface to a second brightness level different from the first brightness level and the off-condition in the opposite direction.

7. The image system of claim 1 wherein the scan surface is different from and faces away from the projection surface.

10 8. The image system of claim 1 wherein the scan surface and the projection surface are the same surface.

9. An image system, comprising:  
15 a screen having a region responsive to electromagnetic energy to produce an adjustable brightness; and  
a beam generator operable to direct first and second electromagnetic beams onto the region, the first beam operable to change the brightness of the region according to a first polarity and the second beam operable to change the brightness of  
20 the region according to a second polarity.

10. The image system of claim 9 wherein the beam generator is operable to direct the first beam onto the region before directing the second beam onto the region.

25 11. The image system of claim 9 wherein the first beam is different than the second beam.

12. The image system of claim 9 wherein:  
the second beam has an intensity; and

the second beam is operable to change the brightness of the region to a brightness level that is related to the intensity.

13. The image system of claim 9 wherein:  
5 the second beam has a duration; and  
the second beam is operable to change the brightness of the region to a brightness level that is related to the duration.

14. The image system of claim 9 wherein the first beam has a different wave  
10 length than the second beam.

15. The image system of claim 9 wherein:  
the first beam is operable to decrease the brightness of the region; and  
the second beam is operable to increase the brightness of the region.

16. The image system of claim 9 wherein:  
the screen has multiple regions of adjustable brightness;  
the beam generator is operable to direct the first and second beams onto the  
regions;  
20 the first beam is operable to change the respective brightnesses of the regions of the screen in the first direction; and  
the second beam is operable to change the brightness of at least one of the regions of the screen in the second direction.

17. The image system of claim 9, further comprising an illuminator operable to  
25 illuminate the screen.

18. An image system, comprising:  
a screen having a region with an adjustable reflectivity; and

a beam generator operable to direct a first and second electromagnetic beams onto the region, the first beam operable to change the reflectivity of the region in a direction and the second beam operable to change the reflectivity of the region in an opposite direction.

5

19. The image system of claim 18 wherein:  
the second beam has an intensity; and  
the second beam is operable to change the reflectivity of the region to a reflectivity level that is related to the intensity.

10

20. The image system of claim 18 wherein:  
the second beam has a duration; and  
the second beam is operable to change the reflectivity of the region to a reflectivity level that is related to the duration.

15

21. The image system of claim 18, further comprising an illuminator operable to illuminate the screen.

20

22. The image system of claim 18 wherein:  
the direction corresponds to increasing the reflectivity of the region; and  
the opposite direction corresponds to decreasing the reflectivity.

25

23. The image system of claim 18 wherein:  
the projection screen has multiple regions of adjustable reflectivity;  
the beam generator is operable to direct the first and second beams onto the regions;

the first beam is operable to change the respective reflectivities of the regions of the projection screen in the direction; and

30

the second beam is operable to change the reflectivity of at least one of the regions of the projection screen in the opposite direction.

24. An image system, comprising:

a projection screen having a scan surface and a projection surface that faces away from the scan surface, the projection surface having a region of adjustable reflectivity; and

a beam generator operable to direct an electromagnetic off beam and an electromagnetic on beam onto the scan surface, the off beam operable to change the reflectivity of a region of the projection surface in a first direction and the on beam operable to change the reflectivity of the region of the projection surface in an opposite direction.

25. The image system of claim 24 wherein:

the scan surface is parallel to the projection surface;

the beam scanner is operable to direct the off beam and on beam onto a region of the scan surface that is perpendicularly aligned with the region of the projection surface.

26. The image system of claim 24, further comprising:

an illuminator operable to illuminate the projection surface of the projection screen;

a display screen that faces the projection surface of the projection screen; and wherein the projection screen is operable to project an image onto the display screen.

27. The image system of claim 24 wherein:

the projection surface has regions of adjustable reflectivity;

the off beam is operable to change the respective reflectivity of each region of the projection surface in a first direction; and

the on beam is operable to change the reflectivity of at least one of the regions of the projection surface in a second direction.

28. A display, comprising:

a screen having a region with an adjustable luminance; and

a beam generator operable to direct an electromagnetic erase beam and an

5 electromagnetic image beam onto the region, the erase beam operable to set the luminance of the region to a predetermined level and the image beam operable to change the luminance of the region to a level other than the predetermined level.

29. The display system of claim 28 wherein the beam generator is operable to

10 direct the erase beam onto the region before directing the image beam onto the region.

30. The display system of claim 28 wherein:

the image beam has an intensity; and

the image beam is operable to change the luminance of the region to a level that

15 is related to the intensity.

31. The display system of claim 28 wherein:

the image beam has a duration; and

the image beam is operable to change the luminance of the region to a level that

20 is related to the duration.

32. The display system of claim 28 wherein:

the projection screen has multiple regions of adjustable luminance;

the beam generator is operable to direct the erase beam and the image beam

25 onto the regions;

the erase beam is operable to set the respective luminances of the regions of the projection screen to the predetermined level; and

the image beam is operable to change the luminance of at least one of the regions of the projection screen to the level other than the predetermined level.

30

33. The display system of claim 28, further comprising an illuminator operable to illuminate the projection screen.

34. An image system, comprising:

5 a projection screen having a scan surface and a projection surface that faces away from the scan surface, the projection surface having a region of adjustable luminance; and

a beam generator operable to direct an electromagnetic erase beam and an electromagnetic image beam onto the scan surface, the erase beam operable to set the  
10 luminance of the region of the projection surface to a predetermined level and the image beam operable to change the luminance of the region of the projection surface to a level other than the predetermined level.

35. The image system of claim 34 wherein:

15 the scan surface is parallel to the projection surface;

the beam generator is operable to direct the erase beam and image beam onto a region of the scan surface that is perpendicularly aligned with the region of the projection surface.

36. The image system of claim 34 wherein:

20 the projection surface has multiple regions of adjustable luminance;

the erase beam is operable to set the respective luminance of each region of the projection surface to the predetermined level; and

the image beam is operable to change the luminance of at least one of the  
25 regions of the projection surface to a level other than the predetermined level.

37. An image system, comprising:

a screen having a region with an adjustable luminance; and

a light emitter operable to direct an erase light and a write light onto the region,  
30 the erase light operable to set the luminance of the region to a predetermined level and

the write light operable to change the luminance of the region to a level other than the predetermined level.

5        38.     The image system of claim 37 wherein the erase and write lights are visible.

39.     The image system of claim 37 wherein the erase and write lights are invisible.

10       40.     The image system of claim 37 wherein the light emitter comprises an organic light-emitting device that is operable to generate the erase light.

15       41.     The image system of claim 37 wherein:  
the region comprises a line of the screen; and  
the light emitter comprises a row of devices operable to generate the erase light.

20       42.     The image system of claim 37 wherein:  
the region comprises a line of the screen; and  
the light emitter comprises a row of organic light-emitting devices operable to generate the erase light.

25       43.     An image system, comprising:  
a screen having a region with an adjustable luminance; and  
a light emitter operable to direct a first light at an erase wavelength and a second light at a write wavelength onto the region, the first light operable to set the luminance of the region to a predetermined level and the second light operable to change the luminance of the region to a level other than the predetermined level.

30       44.     The image system of claim 43 wherein the erase and write wavelengths are in a visible portion of the electromagnetic spectrum.



45. The image system of claim 43 wherein the erase and write wavelengths are in an invisible portion of the electromagnetic spectrum.

5 46. A method, comprising:  
changing the brightness of a region of an image screen in an first direction with a first electromagnetic beam; and  
changing the brightness of the region in an second direction with a second electromagnetic beam.

10 47. The method of claim 46, further comprising changing the brightness of the region of the image with the first beam before changing the brightness of the region with the second beam.

15 48. The method of claim 46, further comprising simultaneously generating the first and second beams.

20 49. The method of claim 46 wherein the first beam has a different characteristic than the second beam.

25 50. The method of claim 46 wherein:  
changing the brightness of the region in the first direction comprises decreasing the brightness of the region; and  
changing the brightness of the region in the second direction comprises increasing the brightness of the region.

30 51. The method of claim 46 wherein changing the brightness of the region in the second direction comprises setting the brightness of the region to a level that is proportional to the intensity of the second beam.

52. The method of claim 46 wherein changing the brightness of the region in the second direction comprises setting the brightness of the region to a level that is proportional to the duration of the second beam.

5 53. The method of claim 46, further comprising illuminating the region of the screen.

54. The method of claim 46 wherein the changing the brightness of the region in the first direction comprises setting the brightness of the region to a predetermined  
10 level.

55. The method of claim 46 wherein:  
changing the brightness of the region in the first direction comprises scanning a scan surface of the image screen with the first beam; and  
15 changing the brightness of the region in the second direction comprises scanning the scan surface of the image screen with the second beam.

56. The method of claim 46, further comprising generating the first and second beams during different time periods.  
20

57. The method of claim 46 wherein:  
changing the brightness of the region of the image screen in the first direction comprises changing the reflectivity of the region in the first direction with the first beam; and  
25 changing the brightness of the region in the second direction comprises changing the reflectivity of the region in the second direction with the second beam.